

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Pat Wood, III, Chairman;
William L. Massey, and Nora Mead Brownell.

Alabama Power Company

Project No. 349-070

ORDER AMENDING LICENSE

(Issued August 22, 2003)

1. On August 11, 2003, Alabama Power Company (licensee) filed a water quality certification from the Alabama Department of Environmental Management (Alabama DEM) pursuant to Section 401 of the Clean Water Act (CWA). The certification states that the licensee's proposed license amendment to refurbish and upgrade three turbine-generator units at the Martin Dam Project No. 349 will meet state water quality standards. The project is located on the Tallapoosa River in Elmore, Coosa, and Tallapoosa counties in central Alabama.

BACKGROUND

2. On December 22, 2000, the licensee filed an application to amend its license for the existing Martin Dam Project. The proposed amendment would allow the licensee to refurbish and upgrade three existing 75-year-old turbine-generator units at Martin Dam powerhouse.¹ The proposed measures would increase the generating capacity of each of the three rehabilitated units by about 7 to 10 MW; and would increase the combined hydraulic capacity of the three rehabilitated turbines by 8.6 percent, from 10,470 cubic feet per second (cfs) to 11,370 cfs.

3. As described in the application, the licensee proposes to refurbish and upgrade the three 33-MW units by installing in each the following new components/systems: a modern-design turbine runner, wicket gate, greaseless bushings for the gate operating system, stainless steel sleeves on the turbine shafts, thrust bearing oil coolers, and wedging system for the generator stator coils. In addition, the licensee proposes to re-insulate the generator rotor pole pieces, and to clean and paint all turbine and generator components.

¹ The project's fourth unit, a 55.2-megawatt (MW) facility installed in 1952, would not be modified.

As explained below, some of the work has already been completed pursuant to an earlier order. The licensee proposes to start the remaining work in the fall of 2003 and complete it by February 28, 2004.

4. On February 2, 2001, the Commission provided public notice of the amendment application with a comment date of March 5, 2001. Three timely response letters were received: (1) a motion to intervene that did not oppose the proposed action, filed on March 5, 2001, by the Alabama Rivers Alliance, Lake Watch of Lake Martin, and American Rivers (intervenors); (2) a comment letter filed on March 5, 2001, from the Alabama Department of Conservation and Natural Resources; and (3) a letter filed on March 5, 2001, by the Department of the Interior, indicating that it had no comments to offer on the subject license amendment. On March 6, 2001, the U.S. Environmental Protection Agency (EPA) also provided comments on the application. By notice issued April 25, 2001, the Commission Secretary granted intervention to the intervenors.

5. On May 23, 2001, the Director, Office of Energy Projects, issued an Order Amending License (95 FERC ¶ 62,156) approving the licensee's amendment application. The order also added Article 56 to the project license and required the licensee to file a plan for monitoring dissolved oxygen content of flows entering and leaving the Martin Dam powerhouse during periods when the reservoir is thermally stratified.

6. The intervenors requested rehearing of this order, arguing that the license amendment was improperly issued because the licensee had not obtained a water quality certification that the proposed turbine replacement would comply with the State of Alabama water quality standards. In a July 23, 2001 Order Denying Rehearing (96 FERC ¶ 61,096), the Commission denied the rehearing request. On September 19, 2001, the intervenors filed a petition for review with the United States Court of Appeals for the District of Columbia Circuit (No. 01-1408). No party sought a stay, and the licensee began work on the upgrades in compliance with the amendment order.² The licensee completed refurbishment of turbine unit 1 by February 2002 and turbine unit 3 by February 2003, and proposes to complete turbine unit 2 by February 2004. The amendment required the

² In a May 24, 2002 Order Modifying and Approving Dissolved Oxygen Monitoring Plan Under Article 56 (99 FERC ¶ 62,138), the Commission approved the licensee's September 21, 2001 filing of its dissolved oxygen monitoring plan. The May 24, 2002 order required the licensee to file a proposed schedule for the turbine upgrades, for initiating the monitoring, and for reporting the monitoring results. In a September 11, 2002 Order Approving Schedules For Turbine Upgrade, Dissolved Oxygen Monitoring and Reporting Under May 24, 2002 Order (100 FERC ¶ 62,167), the Commission approved the licensee's work schedule for the upgrade.

licensee to file annual progress reports with the Commission and resources agencies by April 1 of each year from 2003 through 2006, and a final report of the dissolved oxygen monitoring results by August 1, 2006, after allowing the resource agencies an opportunity to comment and make recommendations on the final report.

7. On April 11, 2003, the D.C. Circuit Court of Appeals held that the licensee was required to obtain water quality certification from the State of Alabama before the Commission could issue a license amendment authorizing the licensee to replace the three 33-MW turbine-generators at the Martin Dam Project. Because the Commission issued the license amendment without having such certification, the court granted the petition for review and vacated the Commission's orders.

WATER QUALITY CERTIFICATION

8. In May 2003, in response to the court decision, the licensee filed a request for water quality certification from the Alabama DEM for its proposed amendment to refurbish and upgrade the three existing 75-year-old turbine-generator units at powerhouse. In its application, the licensee indicated it had already completed refurbishing units 1 and 3, and requested certification for all three units prior to refurbishing unit 2 during the fall of 2003 outage period (September 1, 2003, through February 28, 2004).

9. By letter dated August 8, 2003, the Alabama DEM issued certification, stating that there is reasonable assurance that the discharge resulting from the proposed activities as outlined in the licensee's application will not violate applicable water quality standards established under Section 303 of the CWA and Title 22, Section 22-22-9(g), Code of Alabama, 1975, provided the licensee acts in accordance with the 8 conditions specified in the certificate (attached to this order as Appendix A). Condition 1 requires that the licensee operate the project, including operation of the turbines, such that no less than 4.0 mg/l of dissolved oxygen (D.O.) shall be maintained at all times at the specified monitoring point. Conditions 2-8 specify requirements for compliance monitoring of condition 1 and for reporting the monitoring results.

10. On August 11, 2003, the licensee filed a copy of the water quality certification and requested that the Commission approve its amendment request expeditiously to allow replacement of the remaining turbine this fall. The licensee requests approval of the amendment based on the existing amendment application and administrative record, as supplemented by the water quality certification.

DISCUSSION

11. As noted, between the time that the May 23, 2001 order was issued and the court ruling on April 11, 2003, the licensee had already completed the work on turbine units 1 and 3. The only remaining work is for turbine unit 2. However, the water quality certification applies to all three units. The licensee has also conducted one season of dissolved oxygen monitoring downstream of the project, and indicated in its March 21, 2003 filing that there is no adverse impact to water quality as a result of the refurbishment of turbine unit 1. The existing record, as supplemented by this filing and the water quality certification, is sufficient for review and approval of the amendment request.

12. As discussed in the Environmental Assessment (EA) attached to this order, replacement of the turbine generators would increase the project's hydraulic capacity, with the result that water would be discharged more quickly, and periods of generation would be somewhat shorter. However, water from the reservoir would continue to be released through the new turbine generators in essentially the same manner as it is now released through the existing turbine generators.

13. The Martin Dam Project's turbine intakes are located 65 feet below full pool and 30 feet below the minimum operational pool. During the summer months (June through September) the reservoir is strongly stratified into three layers: the top "epilimnion," middle "metalimnion" or thermocline, and bottom "hypolimnion." The intakes are located well below the epilimnion and thermocline, such that the project draws water from the cold and oxygen poor (hypoxic) hypolimnion.

14. Before the project's existing draft tube aeration system was installed, water discharged from the Martin Dam Project during periods of lake stratification was hypoxic, having dissolved oxygen (DO) levels that often measured less than 4.0 mg/l. After an aeration system was installed at the Martin Dam, Yates, and Thurlow projects, the licensee conducted DO monitoring studies which indicated that the draft tube aeration system typically raises DO levels in the projects' discharges by about 2 mg/l. The EA finds that the proven effectiveness of the aeration system is not likely to be altered by the refurbishment of the turbines at the Martin Dam Project. This conclusion is supported by the results of the licensee's monitoring, which was conducted during 2002.

15. The intervenors assert that the amendment requires the project to maintain a minimum DO standard of 5 mg/l under the State of Alabama's Water Quality Standards. As indicated in the water quality certificate issued August 8, 2003, the Alabama DEM requires that the licensee maintain dissolved oxygen concentrations of no less than 4.0 mg/l at the monitoring points prescribed in the certificate.

16. To ensure that the aeration system operates correctly and the licensee complies with the DO standards in the water quality certificate, the licensee must develop and file, for Commission approval, a plan to monitor the DO content of project releases. The provisions of the plan must comply with requirements of conditions 2 through 8 of the August 8, 2003 water quality certificate. This monitoring must confirm that the project is continuing to meet Alabama's water quality standards by providing DO levels of 4.0 mg/l or greater. If, for any reason, the state standard of 4.0 mg/l is not met, the Commission will require the licensee to implement structural or operational modifications at the project to increase DO in the project's discharge.

17. The intervenors also argue that the Commission's EA must evaluate an appropriate range of alternative actions, including the potential costs and benefits resulting from the installation of a range of oxygen enhancement systems.

18. In a case involving a similar license amendment,³ the Commission concluded that the options of granting or denying the proposed action were an acceptable range of alternatives for consideration under the National Environmental Policy Act (NEPA). The Commission concluded that, under Section 380.2(d)(3) of its NEPA regulations, an environmental assessment need only provide sufficient information to permit a reasoned choice of alternatives. Further, the range of alternatives that must reasonably be considered decreases as the environmental impact of the proposed action becomes less substantial.⁴

19. In addition, there is no demonstrated need for consideration of DO enhancement measures. The intervenors did not provide any substantial information demonstrating that the licensee's proposed measures to upgrade three existing turbines at Martin Dam Project would reduce the DO content of powerhouse releases. As explained in the EA, the proposed small increase in the project's hydraulic capacity is unlikely to have any measurable impact on downstream DO levels with the aeration systems already in place. Therefore, we conclude that there is inadequate justification for analyzing the installation of various types of oxygen enhancement devices.

20. The EA does not identify any significant adverse impacts that would result from Commission's approval of the proposed action. Further, the EA finds that the proposed action could reduce the rate of turbine entrainment mortality at Martin Dam powerhouse. In addition, the proposed action would provide significant power and energy benefits for the

³ Alabama Power Co., 94 FERC ¶ 61,150 (2001) (turbine runner replacement for the Holt Project No. 2203).

⁴ 18 CFR 380.2(d)(3).

licensee and its customers. The EA concludes that approval of the proposed amendment would not constitute a major federal action significantly affecting the quality of the human environment. For the reasons discussed above, we adopt the conclusions in the EA and approve the licensee's proposed turbine-generator rehabilitation plan, with the above modifications.

The Commission orders:

(A) The licensee's application for amendment of license filed on December 22, 2000, requesting that the Commission approve the refurbishment and upgrade of the three 75-year-old turbine-generator units at Martin Dam powerhouse and supplemented with an August 8, 2003 water quality certificate, as modified by paragraph (B) and (C) below, is approved.

(B) The licensee shall comply with all the terms and conditions specified in the Water Quality Certification issued on August 8, 2003, by the Alabama Department of Environmental Management.

(C) The license for Project No. 349 is amended to add Article 56, as follows:

Article 56. Within 60 days of the issuance date of this order amending license for the Martin Dam Project, the licensee shall develop and file, for Commission approval, a plan to monitor the dissolved oxygen (DO) content of flows entering and leaving the Martin Dam powerhouse to meet the conditions specified in the August 8, 2003, water quality certificate. The purpose of the plan is to assess the effect of turbine refurbishment and upgrading on DO concentrations below the project.

If subsequent DO monitoring indicates that the rehabilitated turbines at Martin Dam powerhouse are having an adverse effect on DO concentrations, the licensee must develop and implement measures to increase DO in the project's discharges, either through structural or operational modifications at the project.

The licensee shall prepare the plan after consultation with the Alabama Department of Environmental Management and the Alabama Department of Conservation and Natural Resources. The licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing should include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the licensee shall implement the plan, including any changes required by the Commission.

(D) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days from the date of issuance of this order, pursuant to 18 CFR § 385.713.

By the Commission.

(S E A L)

Magalie R. Salas,
Secretary.

ENVIRONMENTAL ASSESSMENT

APPLICATION FOR AMENDMENT OF LICENSE

MARTIN DAM PROJECT

FERC PROJECT NO. 349-070

ALABAMA

**Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, NE
Washington, D.C. 20426**

AUGUST 2003

ENVIRONMENTAL ASSESSMENT

Project Name: Martin Dam Project

FERC Project No. 349-070

A. APPLICATION

1. Type of Application: Amendment of license
2. Date filed with the Commission: December 22, 2000; additional information filed on May 7, 2001, and August 11, 2003.
3. Applicant: Alabama Power Company
4. Water Body: Tallapoosa River
5. Nearest City or Town: Eclectic, Alabama
6. Counties: Elmore, Coosa, Tallapoosa
7. State: Alabama

On December 22, 2000, Alabama Power Company (licensee) filed an application to amend its license for the existing Martin Dam Project (project). Further, by letter filed on May 7, 2001, the licensee provided additional information concerning the operation of the project. On August 11, 2003, the licensee filed a water quality certification from the Alabama Department of Environmental Management (ADEM) pursuant to Section 401 of the Clean Water Act. The proposed amendment would allow the licensee to refurbish and upgrade three of the four existing turbine-generator units at Martin Dam powerhouse.¹

B. EXISTING FACILITIES

Martin Dam Project, originally constructed in east central Alabama in 1927, consists of: (1) a concrete gravity dam with an earth dike Section, about 2,000 feet in length and a maximum height of 168 feet, containing a 717-foot-long, gated spillway section with 19 bays; (2) a reservoir with a surface area of 40,000 acres at normal maximum elevation, 490 feet mean sea level (msl); (3) headworks containing 12 intake gates and 4 steel penstocks; (4) a brick and concrete, steel-frame powerhouse, 304 feet long, 60 feet wide, and 99 feet high, containing four vertical Francis turbines that power three 33.0-megawatt (MW) and one 55.2-MW generator units, for a total installed capacity of 154.2 MW. The project intake structures are located 65 feet below normal pool elevation and 30 feet below

¹ The project's fourth unit, a 55.2-megawatt (MW) facility installed in 1952, would not be modified.

the minimum operational pool level of 465 msl. The project also includes two short (450-foot-long) 110-kilovolt transmission lines and appurtenant facilities.

The Commission issued a new 40-year license for the continued operation of the Martin Dam Project on May 11, 1978.² The new license authorized the licensee to construct and operate an addition to the east end of the powerhouse containing a new 60.0-MW generating unit. Because the unit became uneconomic, the licensee withdrew its plans to provide additional generating capacity at Martin Dam powerhouse.

C. PROPOSED ACTION AND ALTERNATIVES

1. Proposed Action

The licensee proposes to refurbish and upgrade three of the four existing turbine-generator units at Martin Dam powerhouse. The project's fourth unit, a 55.2-MW facility installed in 1952, would not be involved.

Specifically, the licensee proposes to rehabilitate the three 75-year-old, 33-MW units by installing in each the following new components/systems: a modern-design turbine runner; wicket gate; greaseless bushings for the gate operating system; stainless steel sleeves on the turbine shafts; thrust bearing oil coolers; and wedging system for the generator stator coils. In addition, the licensee proposes to re-insulate the generator rotor pole pieces, and to clean and paint all turbine and generator components.

The proposed measures would increase: (1) the generating capacity of each of the three rehabilitated units by 7 to 10 MW; and (2) the combined hydraulic capacity of the three rehabilitated turbines by 900 cubic feet per second (cfs) or by 8.6 percent--from 10,470 cfs currently to 11,370 cfs.

2. Action Alternatives

There are no other action alternatives for this proposal.

² 3 FERC ¶ 61,137 (1978).

3. No-Action Alternative

The no-action alternative would involve denying the request for license amendment. This would prevent the licensee from implementing its proposed plan to rehabilitate and upgrade three of its four existing turbine-generator units at Martin Dam powerhouse. The units are nearing the end of their useful lives; if the licensee is unable to implement its proposed plan, breakdowns of these units are likely to occur, causing unplanned outages and inefficient operation of the project.

D. CONSULTATION AND PUBLIC NOTICE

By letters dated April 14, and June 27, 2000, the licensee notified the following agencies of its proposed turbine upgrades at Martin Dam powerhouse: Mobile District Corps of Engineers (Corps); Fish and Wildlife Service (FWS); Alabama Department of Conservation and Natural Resources (DCNR); Alabama Historical Commission (AHC); and the ADEM.

On February 2, 2001, the Commission provided public notice of the subject amendment of license with a comment date of March 5, 2001. Three timely response letters were received: (1) a combined motion to intervene filed on March 5, 2001, by the Alabama Rivers Alliance, Lake Watch of Lake Martin, and American Rivers (interveners); (2) a comment letter filed on March 5, 2001, from the Alabama Department of Conservation and Natural Resources (DCNR); and (3) a letter filed on March 5, 2001, by the Department of the Interior indicating that it had no comments to offer on the license amendment. In addition, by letter filed on March 6, 2001, the U.S. Environmental Protection Agency recommended that the licensee be required to obtain water quality certification for the proposed amendment.

In May 2003, in response to the court decision, the licensee filed a request for water quality certification from the ADEM for its proposed amendment to refurbish and upgrade the three existing 75-year-old turbine-generator units at powerhouse. In its application to the ADEM, the licensee indicated it had already completed refurbishing units 1 and 3, and requested certification for all three units prior to refurbishing unit 2 during the fall of 2003 outage period (September 1, 2003, through February 28, 2004).

By letter dated August 8, 2003, the ADEM issued certification, stating that there is reasonable assurance that the discharge resulting from the proposed activities as outlined in the licensee's application will not violate applicable water quality standards established under Section 303 of the CWA and Title 22, Section 22-22-9(g), Code of Alabama, 1975, provided the licensee acts in accordance with the 8 conditions specified in the certificate. Condition 1 requires that the licensee operate the project, including operation of the

turbines, such that no less than 4.0 mg/l of dissolved oxygen (D.O.) shall be maintained at all times at the specified monitoring point. Conditions 2-8 specify requirements for compliance monitoring of condition 1 and for reporting the monitoring results.

On August 11, 2003, the licensee filed a copy of the water quality certification and requested that the Commission approve its amendment request expeditiously to allow replacement of the remaining turbine this fall. The licensee requests approval of the amendment based on the existing amendment application and administrative record, as supplemented by the water quality certification.

E. AFFECTED ENVIRONMENT

1. General Description of the Project Area

Lake Martin reservoir, which was formed in 1926 after the completion of the Martin Dam on the Tallapoosa River, has about 700 miles of shoreline characterized by numerous peninsulas and deep coves at its maximum pool elevation of 490 feet msl. Much of the shoreline is wooded, and its topography varies from steep to moderately-level. Excluding its northern portions, the reservoir shoreline has been extensively developed with single family homes, commercial marinas, and public recreation areas. Most of the developed areas, however, are obscured or screened by the shape and forested character of the shoreline.

2. Water Resources

Lake Martin reservoir is 31 miles in length and has a surface area of about 40,000 acres at its normal pool elevation. The reservoir has sufficient capacity to provide annual stream-flow regulation, and limited flood control when the reservoir is drawn down.

The licensee manages the reservoir pool elevation using an operating curve that specifies the normal operating range by month. The minimum pool elevation on this operating curve is 465 feet msl. During the primary recreation season, Memorial Day through Labor Day, the licensee maintains the reservoir elevation between 487 and 490 feet msl. During fall and winter months, the licensee draws down the reservoir about 10 feet to 480 feet msl. In April and May, the licensee refills the reservoir to its normal maximum operating level.

The licensee operates Martin Dam Project as a peaking facility. During generation, the project's four turbines release up to 17,000 cfs. Hours of generation per day depend on reservoir inflow; usually the project operates for at least eight hours daily on weekdays and for five to six hours on Saturdays. On Sundays, the project does not generate.

Releases from Martin Dam flow directly into the Yates Development's 2,000-acre reservoir and 36.8-MW powerhouse with a hydraulic capacity of 9,600 cfs; releases from that facility flow directly into the Thurlow Development's 574-acre reservoir and 63.5-MW powerhouse with a hydraulic capacity of 11,000 cfs (the Yates and Thurlow developments are licensed to APC as Project No. 2407). Thus, the entire river segment from Martin Dam to Thurlow Dam is impounded. Below Thurlow Dam, however, the Talapoosa River flows unimpeded for 45 miles (FERC 1994).

Flows below Martin Dam range from leakage (from the dam) to approximately 17,000 cfs. The licensee operates the Yates/Thurlow Project in a peaking mode to take advantage of peak releases from the Martin Dam Project. Since 1991, the licensee has provided a continuous 1,200 cfs minimum release from Thurlow powerhouse (APC, 2001). Thus, non-flood flows below Thurlow Dam vary from 1,200 cfs to 17,000 cfs. Flow in the Tallapoosa River, as measured ten miles downstream of Martin Dam, average 4,822 cfs.

Alabama state water quality standards require a mean daily dissolved oxygen (DO) concentration of 4.0 milligrams per liter (mg/l) downstream of an existing hydroelectric project. Like most southeastern reservoirs, Lake Martin thermally stratifies during the summer months. As a result, the project historically released water low in DO through its turbines. To remedy this problem, APC in 1973 installed draft tube aeration systems capable of increasing the DO level of inflows at Martin Dam powerhouse. The licensee operates these systems whenever the DO level of turbine discharges approaches 4.0 mg/l. Usually, the licensee operates these aeration systems from late July through mid-October (APC, 2001).

Water quality monitoring below Martin Dam from 1990 through 1999 indicates that DO concentrations downstream of the project during this period: (1) always exceeded 4.0 mg/l; (2) averaged 6.96 mg/l; and (3) were below 5.0 mg/l only 13 percent of the time tested (APC, 2000, page 8).

3. Fish Resources

The fishery resources of Lake Martin and the Yates project reservoir consist of a diverse assemblage of warm water species. Game species found there include white bass, largemouth bass, spotted bass, striped bass, black crappie, white crappie,³ and bluegill. Non-game species encountered there include gizzard shad, spotted sucker, carp, redhorse, and freshwater drum.

³ A white crappie caught in Lake Martin in April 2000 set a state record for hook and line sport fishing.

4. Terrestrial Resources

Three basic forests types occur on lands near the reservoir: (1) pine forest, consisting primarily of shortleaf and loblolly pines; (2) pine-hardwood mix, comprised of loblolly and shortleaf pine interspersed with black gum, tulip poplar, white oak, sourwood, sweet gum, red maple, American beech, southern red oak and black cherry; and (3) hardwoods, including oaks, hickories, sweet gum and tulip poplar.

Wildlife is abundant in the general region. Game species found there include whitetail deer, gray fox, eastern gray squirrel, eastern cottontail rabbit, mink, raccoon, and beaver. Several species of water birds, including the Canada goose and wood duck, are found at Lake Martin. Other bird species regularly sited there include osprey, common vulture, Carolina chickadee, Carolina wren, common crow, and gray catbird.

5. Threatened and Endangered Species

No federally listed, proposed or candidate species occur in the project area (letter dated August 2, 1999, to Donald F. Seibert from Larry E. Goldman, Field Supervisor, U.S. Fish and Wildlife Service, Daphne, Alabama).

6. Land Use and Recreation

Lake Martin benefits from a favorable location, excellent highway accessibility from several major population centers, large size, excellent water quality, and pleasant, wooded shoreline; consequently, it has attracted considerable residential and commercial development. Many of the lots and homes in the area's subdivisions have been purchased as second, seasonal or retirement homes by residents of the Birmingham, Montgomery, and Atlanta metropolitan areas.

In 1996, recreational use at Lake Martin exceeded 2 million person-hours, of which 75 percent was land-based in nature. The six-month period April through September accounts for 88 percent of the project's annual recreational use. Based on interview responses to a 1996 recreational use survey of Lake Martin, the primary activities of recreationists are boat fishing (31.8%), camping (11.6%), pleasure boating (10.1%), bank fishing (9.7%), and relaxing (8.3%). Seventy-nine percent of those interviewed indicated that the number of recreational sites on the lake is adequate (FERC 1999).

7. Cultural Resources

The Alabama Deputy State Historic Preservation Officer notified the licensee that the facilities to be replaced contribute to the National Register eligibility of Martin Dam. Consequently, before implementing the proposed actions, the licensee should provide the Alabama Historical Commission (AHC) with: (1) large format black and white photographs of the generators, the associated wickets, and the operating systems to be replaced or modified; and (2) historical narratives about the development and installation of the existing turbine technology (letter dated May 3, 2000, to R.M. Akridge from Elizabeth Ann Brown, State of Alabama, Alabama Historical Commission, Montgomery, Alabama).

Because the licensee provided the requested photographs and information to the AHC, cultural resources will not be discussed further in this EA.

F. ENVIRONMENTAL IMPACTS

1. Proposed Action

Construction-related Impacts

The proposed action would not involve any land clearing or construction activities outside the Martin Dam powerhouse; consequently, the proposed action would not produce any major adverse impacts to area soils or terrestrial resources. However, the delivery and storage of machinery and equipment at staging areas adjacent to the powerhouse would produce short-term, minor impacts to area fauna as well as noise, dust, and exhaust emissions. Noise also would be produced by the operation of jackhammers and other machinery within the powerhouse. Because the powerhouse is located in an undeveloped area, these impacts would not affect residences, business establishments or recreation areas.

All construction would be completed within the existing structures of the project and "in the dry". Water would not come in contact with the construction area nor the replacement turbines until the construction is completed. Any residual dust and/or grease and oil that might be present in the turbine generators after installation would be negligible and would be quickly dispersed during the operation of the project. Thus, all construction related impacts to water quality would be short term, and minor to nominal.

Water Quantity and Quality during Project Operation

After the refurbishment of the three existing 33-MW units at Martin Dam powerhouse, daily releases from that facility would not increase over current levels. However, because the proposed amendment would increase the combined hydraulic capacity of the three upgraded turbines by approximately 800 cfs, the project could release

an additional 800 cfs during periods of generation; as a consequence, during the low flow months of the year (mid- to late summer, early fall), the project's generation periods would be somewhat shorter than they are now.

Further, during high-flow periods in the spring, there could be a slight reduction in spillage from the project. Because the reservoir is not stratified during these periods, any reduction in spillage would not affect DO levels in the Tallapoosa River below Martin Dam.

The Martin Project's turbine intakes are located 65 feet below full pool and 30 feet below the minimum operational pool. During the summer months (June through September) the reservoir is strongly stratified into three layers: the top or epilimnion; the middle known as the metalimnion or thermocline; and the bottom or hypolimnion. The level of the intakes is well below the epilimnion and thermocline, such that the project draws water from the cold and oxygen poor (hypoxic) hypolimnion.

Before the project's existing draft tube aeration system was installed, water discharged from the Martin Project during periods of lake stratification was hypoxic, having dissolved oxygen (DO) levels that often measured less than 4.0 milligrams per liter (mg/l). After an aeration system was installed at the Martin Dam, Yates, and Thurlow projects, the licensee conducted DO monitoring studies which indicated that the draft tube aeration system typically raises DO levels in the projects' discharges by about 2 mg/l. The proven effectiveness of the aeration system is not likely to be altered by the refurbishment of the turbines at the Martins Project; however, to ensure that the aeration system operates correctly, we recommend that the licensee develop and file, for Commission approval, a plan to monitor the DO content of project releases. At a minimum, the plan should meet the requirements of the water quality certificate. This monitoring must confirm that the project is continuing to provide DO levels of 4.0 mg/l or greater (that is, that the project continues to meet the State of Alabama's water quality standards).

Turbine Entrainment Mortality

The rate of turbine mortality caused by Francis turbines averages about six percent nationwide, but varies by region (Electric Power Research Institute, 1992). Staff's investigation of hydro projects in the southeast found that small fish (that is, fish less than 3 inches in length) comprise a vast majority of the total number of all fish that experience entrainment. These studies demonstrate that entrained fish tend to be young-of-year fish moving downstream from overcrowded upstream areas. However the depth of the intake structure precludes most young-of-year fish from being entrained through the project.

In the southeast, fish species known to redistribute in this manner are most often sunfish species, crappie, and shad; species which tend to have high reproductive potentials and, therefore, produce more young than the local ecosystem can support. Although large losses of early life stages are usual for these species, they are usually offset by increased survival at later life stages and high reproductive rates. Due to the depth of the intake structures and given that these species are often affected by density-dependent competition, staff concludes that the current mortality rates of emigrating juvenile fish at Martin Dam powerhouse is unlikely to produce any measurable impact on fish populations in Martin Lake.

The proposed license amendment would, by increasing the hydraulic capacity of the existing powerhouse, marginally increase the opportunity for young-of-year fish to be entrained in the three refurbished turbines. However, the refurbished turbines would have a blade design that permits them to be operated more efficiently; this blade design would allow small fish that become entrained to have a somewhat greater survival rate than the current turbine design allows. Therefore, the proposed amendment would not produce any project-induced turbine entrainment mortality or adverse effect on the area's fish populations.

Impacts to Fishing Opportunities from Increasing the Hydraulic Capacity of Martin Dam Powerhouse

The DCNR is concerned that the increased hydraulic discharge from Martin Dam powerhouse resulting from the proposed turbine upgrades would increase the duration of daily low-flow periods to Yates reservoir, downstream; consequently, DCNR asserts that fishing opportunities in the tailwaters below Martin Dam powerhouse and in the shallower upstream portions of Yates reservoir would decline.

The licensee responds that surveys of recreational fishing at Yates reservoir reveal that, during April and May, when fishing activity at Yates reservoir peaks, there are an

average of only 4 or 5 anglers per day who use the Martin Dam tailwater fishing area. Further, the licensee states that studies implemented during relicensing of the Yates and Thurlow developments determined that fish populations and angler catch rates in the upper portions of Thurlow reservoir were unaffected by small declines (decreases of 0.5 to 1.0 foot per day) in the elevation of that reservoir. Consequently, the licensee concludes that small increases in the duration of periods of relatively low or no releases from Martin Dam powerhouse would not have any measurable impact on fishing opportunities in the upper portions of Yates reservoir.

To provide the required 1,200 cfs minimum flow below Thurlow Dam, the licensee generally implements one 6-hour period of generation at Martin Dam powerhouse each Saturday. This flow currently is and will continue to be provided by Unit No. 4, which will not be affected by the proposed amendment. Consequently, staff concludes that weekend anglers who prefer to fish in moderate currents would schedule their fishing time to coincide with these releases. In contrast, anglers who prefer to fish during periods of low flows would plan to be at Martin Dam tailrace or the upper portions of Yates reservoir on Sundays when no releases are scheduled from Martin Dam.

Further, staff finds that implementation of the proposed amendment would not significantly modify Martin Dam Project's existing weekday releases. Thus, fishing opportunities below Martin Dam on weekdays would not be affected measurably. Based on data provided by the licensee, the proposed turbine upgrades at Martin Dam powerhouse would decrease the duration of powerhouse releases by a maximum of about 3 minutes per hour of generation when Units 1, 2, 3, and 4 are operating at full gate. Thus, during weekday periods of peak generation, releases from Martin Dam powerhouse would be reduced from about eight hours currently to about 7.5 hours.

Given that most anglers who use the tailwaters at Martin Dam powerhouse reside within a 15 to 45 minute drive of the tailwater area, and that the licensee provides a telephone line notifying the public of its planned generation schedule, staff concludes that anglers who use the tailwater fishing area below Martin Dam or the upper portions of Yates reservoir would not experience any measurable reduction in fishing opportunities during weekdays as a consequence of operating the rehabilitated turbine-generator units.

2. No-Action Alternative

This alternative would prevent the licensee from implementing its proposed plan to rehabilitate and upgrade three of its four existing turbine-generator units at Martin Dam powerhouse. The units are nearing the end of their useful lives; if the licensee is unable to implement its proposed plan, breakdowns of these units are likely to occur causing unplanned outages and inefficient operation of the project. Under the no-action alternative,

the relatively minor impacts to project area environmental resources, discussed above, would be precluded.

G. CONCLUSIONS AND RECOMMENDATIONS

Based on the impacts discussed above, staff concludes that Commission approval of the proposed license amendment would not produce any measurable adverse effects on water quality or create any long-term impacts to other environmental resources. We conclude, therefore, that approval of the proposed amendment of license would not constitute a major federal action significantly affecting the quality of the human environment.

H. LITERATURE CITED OR REVIEWED

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Prepared by:

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APPENDIX A - WATER QUALITY CERTIFICATION

ADEM



ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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JAMES W. WARR
DIRECTOR

BOB RILEY
GOVERNOR

August 8, 2003

Mr. John D. Grogan
Manager
Environmental Compliance
Alabama Power Company
P.O. Box 2641
Birmingham, Alabama 35291

RE: **Water Quality Certification**
FERC Project No. 349
Martin Dam

Dear Mr. Grogan,

Because action pertinent to water quality certification is required by Section 401(a)(1) of the Clean Water Act, 33 U.S.C. Section 1251, *et seq.*, the Alabama Department of Environmental Management hereby issues Certification that there is reasonable assurance that the discharge resulting from the proposed activities as outlined in the permittee's May 2003 license application will not violate applicable water quality standards established under Section 303 of the Clean Water Act and Title 22, Section 22-22-9(g), *Code of Alabama*, 1975, provided the applicant acts in accordance with the following conditions as specified.

LIMITATIONS

1. The operation of this project, including the operation of the turbines, shall be managed such that no less than 4.0 mg/l of dissolved oxygen (D.O.) shall be maintained at all times at the monitoring point prescribed herein downstream of the project. Management required to maintain the D.O. concentration shall be implemented to assure that the 4.0 mg/l D.O. criterion is maintained.

MONITORING AND REPORTING

2. The monitoring point for determining compliance with paragraph 1. above shall be located downstream of Martin Dam at a point representative of the turbine discharge. The design and location of the monitoring system shall be submitted to the Department for review and approval.

Birmingham Branch
110 Vulcan Road
Birmingham, Alabama 35209-4702
(205) 942-6166
(205) 941-1603 (Fax)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, Alabama 35603-1333
(256) 353-1713
(256) 340-0359 (Fax)

Mobile Branch
2204 Perimeter Road
Mobile, Alabama 36615-1131
(251) 450-3400
(251) 479-2593 (Fax)

Mobile - Coastal
4171 Commanders Drive
Mobile, Alabama 36615-1421
(251) 432-6533
(251) 432-6588 (Fax)



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3. Monitoring and recording of the D.O. concentrations and water temperature levels in the dam tailrace shall be performed at 30-minute intervals beginning with the determination that water in the Martin Dam forebay has stratified or on June 1, whichever occurs first. Monitoring will be conducted during periods of turbine operation. This monitoring of downstream D.O. and temperature shall continue until October 31 or until the forebay has become de-stratified. At this time all monitoring of water quality will be discontinued until the next spring.
4. Forebay profile monitoring and recording of D.O. and temperature will begin the first week of May and will be performed every two weeks until indications of forebay stratification appear or until monitoring of the intake water begins, whichever occurs first. Monitoring of forebay waters will resume the first week of October and continue every two weeks until de-stratification of the forebay occurs.
5. Intake waters will be monitored and recorded at 30-minute intervals for D.O. and temperature during periods of turbine operation from June 1 through September 30 of each year. This monitoring will occur at a tap point in the unit's penstock or scrollcase which will give a representative measurement of intake D.O. and temperature. This representative location will be determined experimentally by Alabama Power Company personnel.
6. Alabama Power Company will provide adequate and frequent maintenance and calibration of the D.O. and temperature monitoring equipment to assure its proper operation. The D.O. monitoring equipment will be calibrated at an acceptable frequency using the manufacturer's recommendations, the modified Winkler Method, Method 360.2 of the Environmental Protection Agency's Method for Chemical Analysis of Water and Wastes, latest edition, or other equivalent methods.
7. All records as required by paragraphs 3 through 5 above shall be certified for accuracy by a responsible official of Alabama Power Company and transmitted to the Department's Water Division each year, within 28 days after the end of the monitoring period. Compliance with the conditions of this certification shall begin within 30 days after the modification of the license has been approved by the Federal Energy Regulatory Commission (FERC).
8. The monitoring prescribed above will continue for a period of two years following the unit upgrades. After two years of monitoring, an assessment of the effects of turbine refurbishment and upgrading on D.O. concentrations downstream of the project will be made based on the monitoring prescribed herein. If the monitoring results do not indicate substantial compliance with the State of Alabama water quality standards (maintenance of a D.O. concentration of 4.0 mg/l or greater), Alabama Power Company will develop

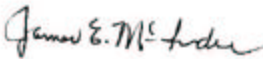
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and implement measures to increase D.O. in the project's discharges through structural or operational modifications at the project. The assessment will be filed with the Department within six months following the two-year monitoring period. As a part of the assessment Alabama Power Company shall furnish, at the Department's request, other data and information that may be available but not expressly required in this monitoring plan.

The Department also certifies that there are no applicable effluent limitations nor other limitations imposed under Section 301(b) or 302 or other standards imposed under Sections 306 or 307 of the Clean Water Act.

If you have questions or comments, please contact Mr. Lynn Sisk at (334) 271-7826.

Sincerely,



James E. McIndoe
Chief, Water Division